

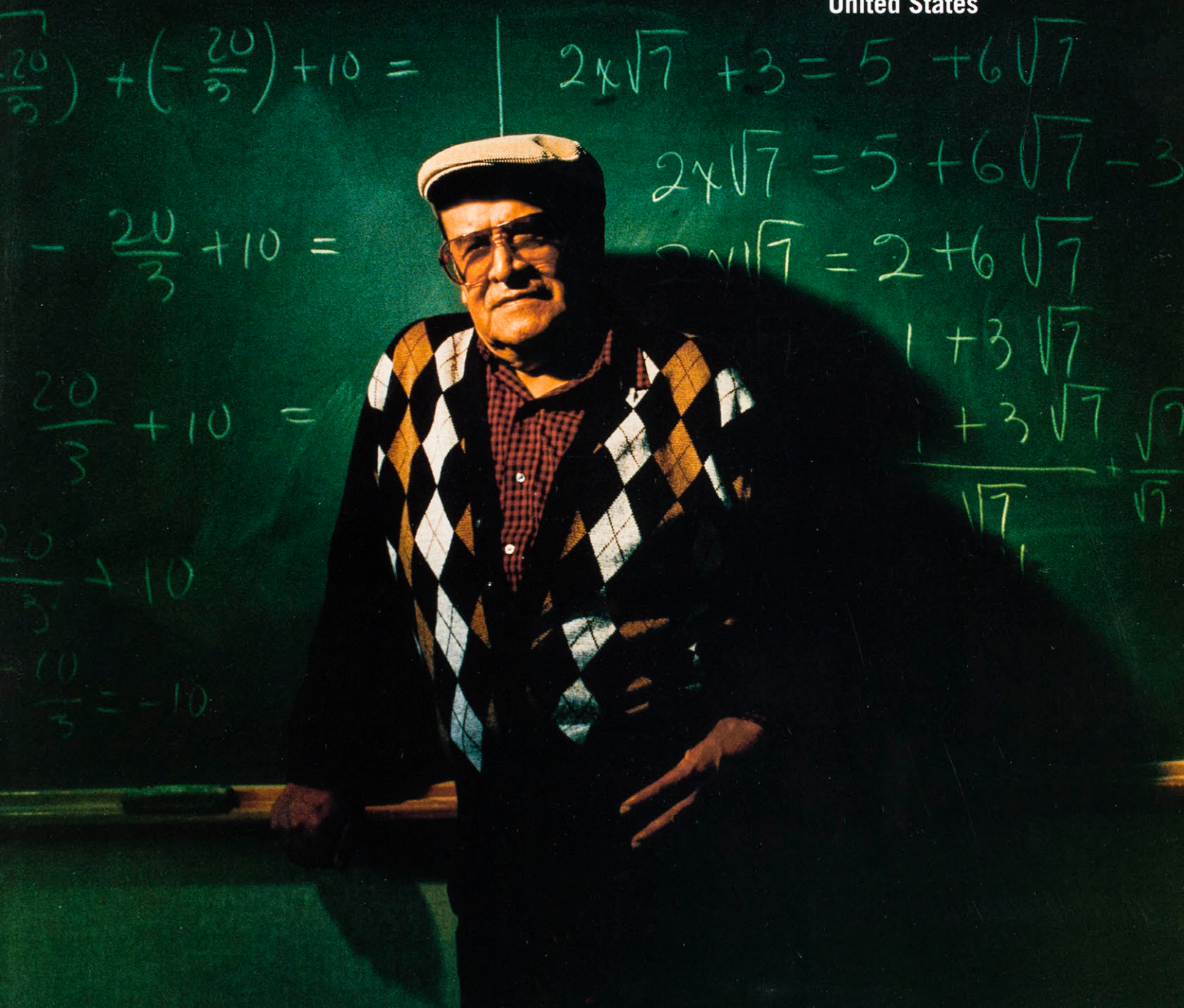
FALL 2000
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NATURAL HISTORY MUSEUM
OF LOS ANGELES COUNTY

TERRA

THE TIME TO STUDY

AMERICANOS

Latino Life in the
United States



Americanos: Latino Life in the United States

"This collection of photographs reveals people who are diverse in culture, color, ideas, and dreams, who share a common desire to make life better for themselves, their families, their neighbors, their nation. These images, in their silent dignity, tell the stories of Latinos, and in so doing, they tell the story of America. We present them to you con respeto y amor."

EDWARD JAMES OLMOS

Actor and Community Activist

Cover: Jaime Escalante, math instructor at Hiram Johnson High School in Sacramento, is remembered most as the inspiration for the film *Stand and Deliver*, where he was portrayed by actor Edward James Olmos. Photograph by José Luis Villegas. Sacramento, California

Below: Marisol daydreams at dusk. Marisol has made tremendous progress in school in the United States and wants to become a computer teacher. México

"As Latinos in America we have continued our everyday practices and special celebrations that mark the values and beliefs we share. Our quinceañeras, our bailes, our bodas, our pastorelas, our fiestas patrias, our foods, our music, and our arts are all part of the cultural contributions we have made to the vibrant life of the United States...a cultural citizenship through which we have claimed our identities, our space, and our rights. It is important to affirm for ourselves and for others the myriad ways in which we have enriched this country, from our historic beginnings as an ancient people to our contemporary lives. We must make visible and understood the Latino vernacular within public life. From the vendedores to the murals, from the yard shrines of the Virgen de Guadalupe to the websites of Chicano activists, we have transformed the cultural landscape of North America."

AMALIA MESA-BAINS

Artist, Educator, and Community Advocate



PHOTOGRAPHER: JANET JAGMAN



PHOTOGRAPHER: GENARO MOLINA

Members of the Wence family mourn the loss of the family's matriarch, Leonor Wence, while music is played in her memory at Resurrection Cemetery. Montebello, California

*"These hands have fought and worked.
These mouths have sung and kissed.
These ears have heard and feared.
These eyes have seen and dreamed.
They are all here, from Alaska to Magellan.
They are all here, from California to New York.
We are all here.
Todos estamos aquí."*

CARLOS FUENTES
Novelist

"When we came to the United States, we had to learn American culture and get to know the people. That was difficult, because we were young, did not speak English, and were away from home for the first time. Still we wanted to be involved in this country in more ways than playing baseball.

We came from places with strong, independent baseball traditions. Many of the early Latin American stars in the big leagues, like [Orlando] Cepeda and Luis Tiant, had fathers who were baseball legends in places like Puerto Rico and Cuba. The way we learned to play, with great individual flair, reminds players and fans that baseball is fun as well as hard work.

Youngsters in the United States and Latin America see us as their trailblazers. Baseball is not only the national pastime of the United States, it is the pastime of the Americas!"

SANDY ALOMAR, JR.
Catcher, Cleveland Indians



Gustavo González, 3, rides his bike past a mural of mariachis at Mariachi Plaza in Boyle Heights.

Los Angeles, California

Yoo-mi Lee, from Argentina, is currently a graphic designer in Manhattan.

New York, New York



Text and captions for this article were drawn from the **Americanos** catalogue and exhibition labels. The catalogue for **Americanos**, published by Little, Brown, is available at the Natural History Museum Explore Store.



Bernadine Mendoza sews a new American flag.
Houston, Texas

Americanos: Latino Life in the United States, on display in the Natural History Museum's Dart Gallery from December 2 through February 25, 2001, presents 120 photographs by thirty of the nation's top photo-journalists. The exhibition offers an extraordinary view of the breadth and variety of the Latino experience, encompassing the spectra of national origin, economic status, education, profession, religion, and language. Through the medium of photography, **Americanos** explores the complexity of interconnected cultures and presents a fascinating self-portrait of Latino America.

Americanos: Latino Life in the United States, a project of Olmos Productions, has been organized by the Smithsonian Institution Traveling Exhibition Service and the Smithsonian Center for Latino Initiatives. The exhibition has been made possible through the generous support of Time Warner Inc. and U S WEST. Additional support has been provided by Farmers Insurance. Local public and educational programs are made possible by a grant from Warner Brothers and Farmers Insurance.

Feathered Tyrants

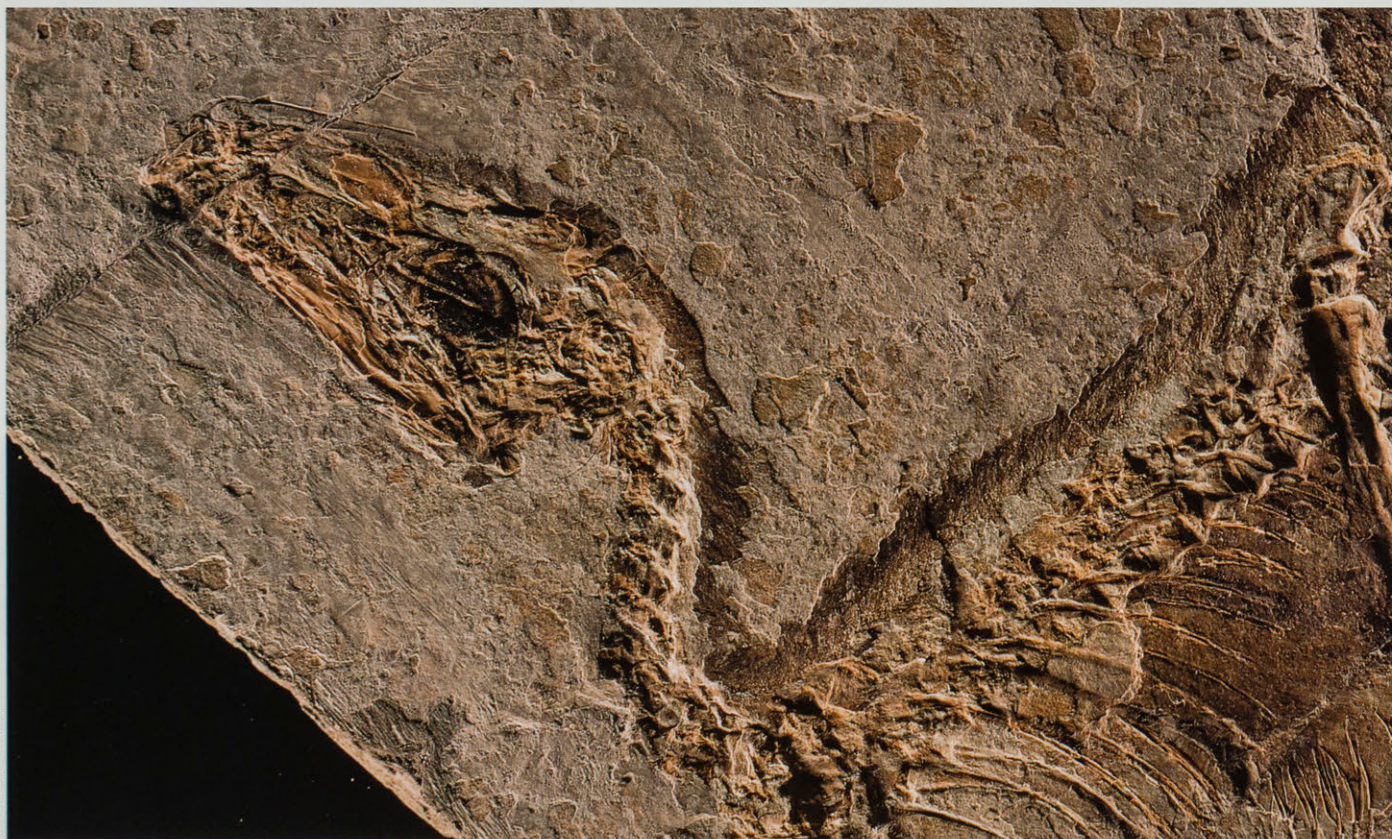
LUIS M. CHIAPPE

THE EVOLUTIONARY HISTORY OF THEROPOD DINOSAURS—*TYRANNOSAURUS* AND ALL OTHER carnivorous dinosaurs—dates back 230 million years, when dinosaurs first appear in the fossil record. At such an early phase of dinosaur evolution, theropods had already developed their typical predatory features—powerfully clawed hands and sharp, knife-like teeth. Throughout their long history, theropods developed dozens of highly specialized features but perhaps none is more striking than feathers, which in time helped them to become warm-blooded and airborne.

Paleontologists believe that theropods originated from a bipedal dinosaur that had feet with only three fully developed toes. The subsequent early history of theropods witnessed the evolution of a number of primitive lineages including the lightly built Late Triassic *Coelophysis* and the much larger and horned Late Cretaceous *Carnotaurus*, both exhibited in the Natural History Museum's dinosaur halls. Although *Carnotaurus* and all its known relatives lived at the end of the Cretaceous, there is little doubt that this primitive lineage of theropods evolved many millions of years earlier. Another branch of primitive theropods contains a group called tetanurans. Its earliest member also dates back to the Late Triassic. This and all other tetanurans had their origins in a common ancestor that possessed a wishbone and hands with three fingers. In time, certain tetanurans differentiated into some of the most famous meat-eaters, such as the Late Jurassic *Allosaurus* and the Late Cretaceous *Tyrannosaurus*, with mounts also in our museum. A branch of tetanurans, the coelurosaurs, evolved from an ancestor that had long arms and large breastbones. This first coelurosaur led to a number of theropod branches including the bird-mimic ornithomimids, the parrot-headed oviraptorids, and the sickle-toed dromaeosaurids. Some members of this last group, the dromaeosaurids, like *Velociraptor* of Jurassic Park fame, are widely regarded as the closest relatives of birds.

Opposite: A red-faced songbird perches by the fossil remains of its ancient cousin *Sinornithosaurus*. The 125 million years spanned between the lives of these two relatives have not obscured the evidence for their kinship. A dark halo surrounding the fossilized skeleton of *Sinornithosaurus* tells us of its feathered appearance.

Below: The dark, short plumage of *Sinosauropteryx* outlines the top of its head, neck, and trunk. Discovered in 1996, this small coelurosaur provided the first direct evidence for the dinosaurian origin of feathers.



O. LOUIS MAZZATENTA

O. LOUIS MAZZATENTA





With a body covered by down-like plumage and its tail crowned by vaned feathers, turkey-sized *Protarchaeopteryx* may be a close relative of the sickle-toed *Velociraptor*. The only known skeleton of *Protarchaeopteryx* does not provide much evidence to substantiate this hypothesis more strongly, however.

That birds are the descendants of predatory dinosaurs has long been established on the basis of skeletal features. This strongly supported hypothesis was first proposed in the mid-1860s by a German embryologist, C. Gegenbaur, and immediately heralded by British anatomist T. H. Huxley, Charles Darwin's strongest advocate during the nineteenth-century evolutionary debate. Huxley cleverly pointed out that there was nothing illegitimate in the idea that birds evolved from dinosaurs. Almost at the same time as the appearance of this genealogical hypothesis, some paleontologists started arguing that the anatomical similarity between birds and dinosaurs could have been more related to performing similar functions than to a common genealogical history. It has long been known that physical structures may appear similar due to the functions they perform. Birds and pterosaurs, for example, have wings that allow them to become airborne. In contrast to popular belief, paleontologists have long argued that birds and pterosaurs are two different groups of flying vertebrates that evolved from different reptilian ancestors. Regardless of their superficial similarity and comparable function, a close examination of the wing of a pterosaur shows that its membranous airfoil and ring-fingered support is a completely different design than that of bird wings, which have feathers attached to the bones of the forearm and hand. Superficially similar structures with comparable functions, such as the wings of pterosaurs and birds, are usually termed *evolutionary convergences*.

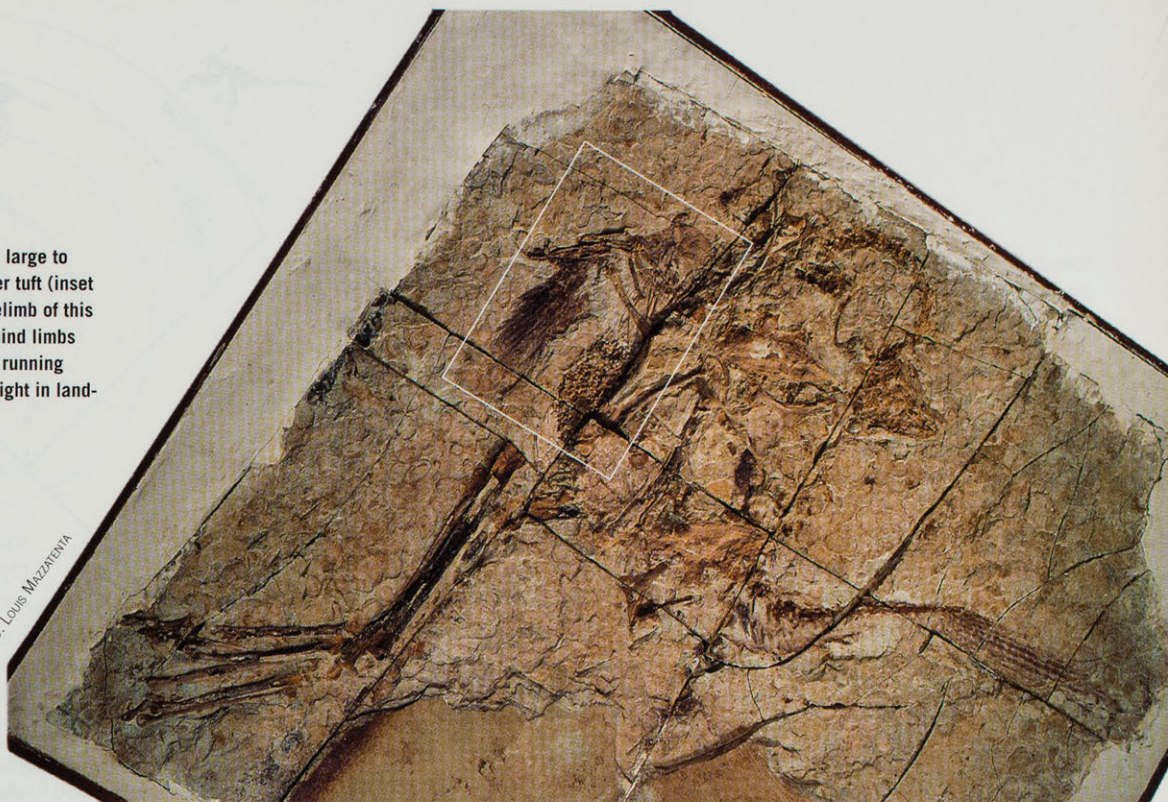
This convergence argument received strong support with the 1926 English translation of *The Origin of Birds*, an influential book written by Danish illustrator and amateur paleontologist, G. Heilmann, a decade earlier. In his book, Heilmann demonstrated a vast knowledge of the anatomy of birds, dinosaurs, and other fossil reptiles. After reviewing almost every anatomical system, Heilmann concluded that theropod dinosaurs were structurally closer to birds than to any other vertebrate lineage. Yet, because he believed that these dinosaurs lacked collarbones, he rejected them as avian ancestors and embraced the argument of evolutionary convergence to explain the overwhelming similarities between birds and theropods. Today, this rationale may appear rather odd, but in Heilmann's days, many scientists believed that anatomical structures could not be reinvented. Consequently, they reasoned that because birds have collarbones—usually fused into a wishbone—and theropods allegedly do not, the origin of birds could not be found among theropod dinosaurs. Ironically, by the time *The Origin of Birds* was translated into English, evidence of collarbones in theropod dinosaurs had already been discovered, although it remained overlooked until decades later.

With the profound influence of Heilmann's book, the dinosaurian origin of birds fell in disgrace until it was revived by Yale University paleontologist John Ostrom in the early 1970s. Since then, a number of spectacular discoveries have provided a host of skeletal data in support of this view. Most recently, independent lines of evidence, including eggshell structure and behavior, have consolidated the view that birds are feathered descendants of coelurosaur theropods. Perhaps the most resounding piece of recent evidence, however, came through a series of awesome discoveries in the remote northeastern corner of China, which documented the presence of feathers in a series of Early Cretaceous theropod dinosaurs.

Indeed, *Sinosauropteryx*, *Protoarchaeopteryx*, *Caudipteryx*, *Beipiaosaurus*, and *Sinornithosaurus* are a menagerie of small coelurosaur theropods covered with feathers of different kinds; however, several features of their skeletons prevent their classification as birds. Both in China and abroad, these handful of specimens have ignited heated debates between those in favor of the dinosaurian origin of birds and a minority of scientists who react against this view. Because feathers have long thought to be the ultimate avian attribute, the question of whether these integumentary structures are real feathers has become the center of intense scientific scrutiny.

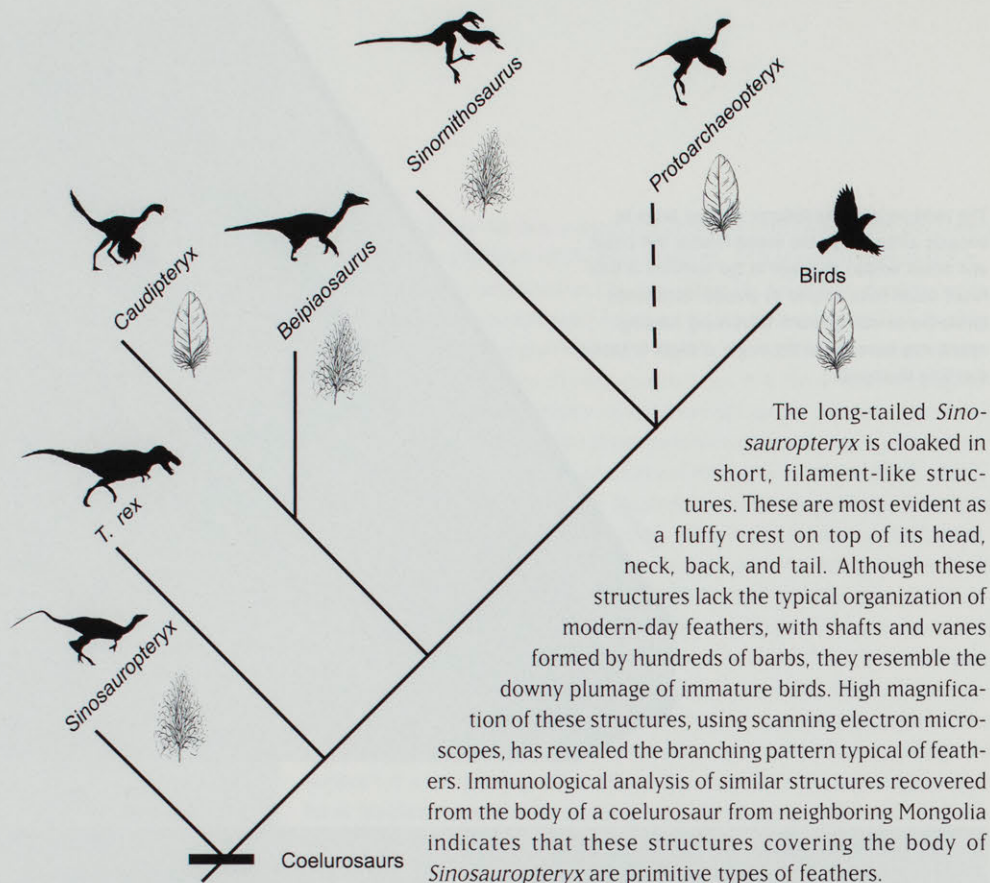
The turkey-sized *Caudipteryx* was too large to become airborne, so the vaned feather tuft (inset and detail below) attached to the forelimb of this fossil could have helped its slender hind limbs thrust the animal forward. Increasing running speed may have led to the origin of flight in land-dwelling theropods.

O. LOUIS MAZZATENTA



O. LOUIS MAZZATENTA

This diagram depicts the genealogical relationships of the Chinese feathered dinosaurs. Down-like feathers may have originated in the ancestor of all coelurosaurs. These feathers subsequently evolved the more complex design of vaned feathers. The fact that *Tyrannosaurus rex* is genealogically nested within feathered dinosaurs suggests that this mighty predator could have also been feathered.



Luis Chiappe examines the fine mudstones of Sihetun, in northeastern China. Known for its exceptionally preserved fossils, this site has produced the greatest concentration of feathered dinosaurs in the world.

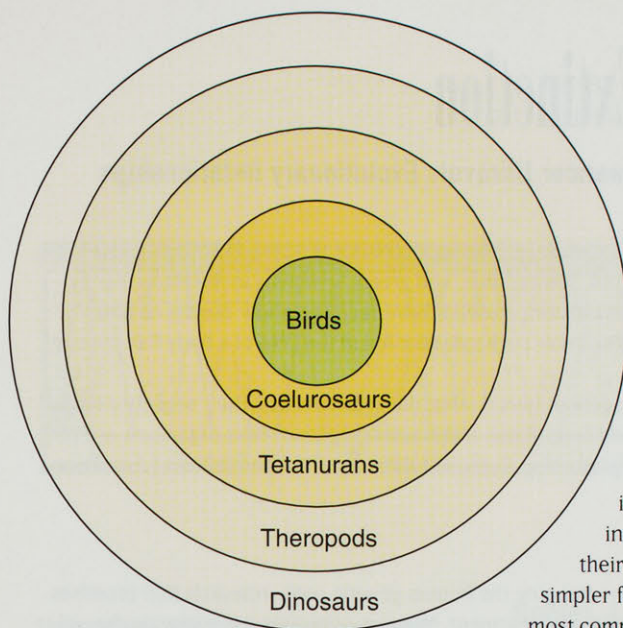


Comparable down-like feathers have also been found attached to the bones of *Beipiaosaurus* and *Sinornithosaurus*. *Beipiaosaurus* is a close cousin of some of the most bizarre coelurosaur theropods, the therizinosaurs, often large creatures with enormous hand claws and leaf-shaped teeth. *Sinornithosaurus* is a close relative of much more familiar meat-eating dinosaurs, the dromaeosaurids, a group of coelurosaurs that include the sickle-toed *Velociraptor* and its kin.

The remaining two Chinese feathered dinosaurs, *Caudipteryx* and *Protarchaeopteryx*, were equipped with fully vaned feathers. It is an amazing experience to gaze at the entirely modern feathers of creatures that, by their skeletal characteristics, are so unquestionably dinosaurian. You feel as though you are witnessing the lengthy process of evolution. Characteristics of the skull and the skeleton of *Caudipteryx* indicate it was a primitive member of the oviraptorids, a weird looking lineage of tall-snouted coelurosaur theropods, with skulls that superficially resemble those of parrots. In the *Caudipteryx* these feathers are attached to the forelimb and tail. As for *Protarchaeopteryx*, the characteristics of its plumage are comparable to those of *Caudipteryx*. Although this dinosaur is not as well known, its place within the family tree of predatory dinosaurs may be close to *Velociraptor*, *Sinornithosaurus*, and their dromaeosaurid relatives.

Undoubtedly, China's feathered dinosaurs rank among the most spectacular fossils discovered during the twentieth century. This diverse ensemble of dinosaurs—spread over a good portion of the theropod family tree—suggests that feathers were widespread among the coelurosaur forerunners of birds. Even the colossal *Tyrannosaurus rex* may have been cloaked with feathers at some early stage of its life. Although for years regarded as a close cousin of *Allosaurus* and other large, primitive tetanurans, tyrannosaurids are now regarded by most dinosaur paleontologists to be overgrown coelurosaurs with atrophied arms. However, paleontologists believe that the bodies of adult tyrannosaurids were not feathered because the combination of this insulating covering and their enormous size might have made it difficult for them to regulate their body temperature. A few scaly skin patches preserved in association with adult tyrannosaurid skeletons support this idea.

Another important corollary of the Chinese discoveries and their genealogical interpretation is that feathers did not evolve in the context of flight—one of their most obvious functions in



The genealogical relationships of dinosaurs can be represented as a series of concentric circles in which smaller groups are contained within larger groups. Because birds are coelurosaurs and tetanurans, birds are theropods and, ultimately, dinosaurs.

today's birds. None of China's feathered dinosaurs was able to take to the air, even those with the longest vaned feathers such as *Caudipteryx* and *Protarchaeopteryx*. Both their forelimbs and feathers are much shorter than in flying birds and their bodies are larger. The evolution of birds and possibly flight involved a dramatic reduction in body size. The remains of Chinese feathered dinosaurs indicate that at first, feathers must have had a different function. Understanding the functional advantage of an evolutionary novelty is always more difficult than determining its evolutionary origin. It also involves more speculation, because functions are not preserved in the fossil record. My research has suggested that vaned feathers may have originated in the context of thrust. They may have evolved in running coelurosaurs that, by flapping their feathered arms, were able to increase their running speed. The origin of coelurosaurs' simpler feathers, those branched filaments that covered the body of *Sinosauropteryx*, has been most commonly explained within the context of insulation or sexual display. In the end, however, we simply do not have an answer, although we have been able to reduce our ignorance by eliminating flight as one of the functional explanations for the origin of feathers.

As odd as it may seem, evidence accumulated over more than a century strongly indicates that birds are nested within the same branch of the dinosaur family tree that contains *Velociraptor* and *Tyrannosaurus*. Among many dinosaur features, birds have retained the bipedalism and the three fully developed toes of their ancestral theropods. They have the wishbones and three-fingered hands of tetanurans, and the long arms and large breast bones of coelurosaurs. In recent years, paleontologists have discovered that the microstructure of the eggshell of coelurosaurs was nearly identical to that of birds, that coelurosaurs had the common avian behavior of brooding their eggs by sitting on top of their nests, and that their bodies were covered with feathers. All these data compellingly show that birds evolved from coelurosaurs and that they therefore are living coelurosaurs. Because birds are coelurosaurs, they are also tetanurans, theropods, and in the end, dinosaurs.

The fact that feathers, long thought to be a characteristic unique to birds, have been found on fossil skeletons of other coelurosaur dinosaurs dealt the final blow to paleontologists who doubted that birds evolved from dinosaurs. Evidence of this peculiar pedigree for our familiar companions was long available in their bones, although incorrect assumptions about the evolutionary process and misinterpretations of the bone anatomy of theropods temporarily clouded this evolutionary transformation. The more recent evidence of behavior, eggshell, and integument is just further confirmation of what should have been obvious. More than 130 years ago, Huxley cleverly pointed out that there was nothing illegitimate in the idea that birds evolved from dinosaurs. Like many other scientific disciplines, paleontological inferences are always hypothetical, because no one has ever seen one fossil evolving into another. Within this framework, the dinosaurian origin of birds is not only justifiable but it is legitimate to say that it happened. Today, we can assert the hypothesis that birds are dinosaurs with almost the same degree of confidence that we support the hypothesis that humans are primates.

Luis M. Chiappe is Associate Curator and Chairman of the Museum's Department of Vertebrate Paleontology. He was born and raised in Buenos Aires, Argentina, where he began his study of dinosaurs and fossil reptiles abundant in his native country. He spent seven years conducting research at the American Museum of Natural History in New York and joined the Natural History Museum of Los Angeles County in 1999. A Guggenheim Fellow, Dr. Chiappe lives in Santa Monica.

A *T. rex* Named Sue

November 18 through April 22, 2001
Special Exhibits Gallery, first floor

There's no question about it: Some 67 million years ago Sue and the rest of her (or his—scientists don't know if Sue was male or female) species were the biggest, fiercest meat eaters to roam North America. Now you can size up the 45-foot-long life-size cast of the largest and most complete *Tyrannosaurus rex* skeleton yet found.

This national touring exhibition also features interactive components that let you understand how Sue lived in her (or his) world. How did *T. rex* use its tiny forelimbs? How good was its sense of smell? Was *T. rex* a hunter or a scavenger? Did *T. rex* have feathers?

Also included in the exhibit is the Natural History Museum of Los Angeles County's own *T. rex* skull excavated in the 1960s. A simulated dig pit will provide children with an opportunity to find out what it's like to discover their own fossils.

A *T. rex* named Sue was created by The Field Museum, Chicago, and made possible through the generosity of McDonald's Corporation.

To find out more about Sue, check out the museum's website at <http://www.nhm.org/whatsnew/>



Front view of Sue before unveiling at The Field Museum, Chicago. ©2000 The Field Museum. Photo

A Race Against Extinction

The Museum's New DNA Sequencer Unravels Evolutionary Relationships

DENNIS ARP

CASCADING COLORS SLOWLY ASSEMBLE ON A COMPUTER SCREEN, FORMING A DIGITAL mosaic with patterns of red, yellow, blue, and green. Scientists in the Molecular Systematics Lab at the Natural History Museum have seen this show dozens of times before. Still, they marvel. Who knew such splendor hid in the DNA of a bony fish the size of your pinky finger?

Even more beautiful to researchers is what the colors reveal. Their sequence holds the basic code for assembling life, and from these codes scientists learn how organisms are related, how they interact, and possibly how best to protect them from the possibility of extinction in the future.

Life's Building Blocks

We've all read about breakthroughs in mapping the human genetic code, research that promises advances in medical technology and disease treatment. Museum scientists are exploring the utility of their DNA research into biodiversity. By going inside species' DNA, the basic building blocks of life, they discover evidence for evolutionary relationships, which enables them to put current patterns in a historical context. This leads to better understanding of how diverse organisms live, reproduce, and change.

"A lot of our work is understanding the big questions of evolution—how large members of a group are related to small ones, why some species spread all over the world while others remain in one restricted area," Dr. Christine Thacker said. "This work will go a long way toward helping us identify populations that need to be better cared for."

Dr. Thacker, the museum's assistant curator for ichthyology, and Dr. David Kizirian, the assistant curator for herpetology, codirect the museum's DNA lab. A new automated sequencer allows researchers to study evolution on a much finer scale than previously possible. It's as if researchers had been looking through a microscope on low resolution, Dr. Thacker said. "Now we can turn the resolution much higher and see more and more."

They can also get results faster and faster. "We get more data in less time," Dr. Kizirian said. Less than a decade ago, manual DNA sequencing involved radioactive isotopes. Now automated testing is done chiefly with gels, lasers, and computers.

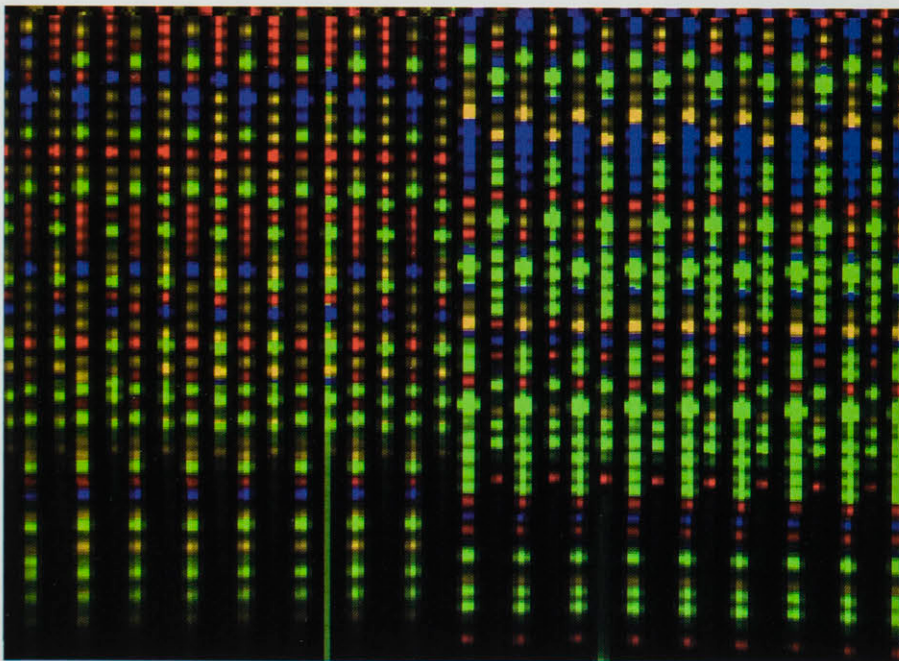
"If the process is less toxic, we can involve more people, including more students," Dr. Kizirian said.

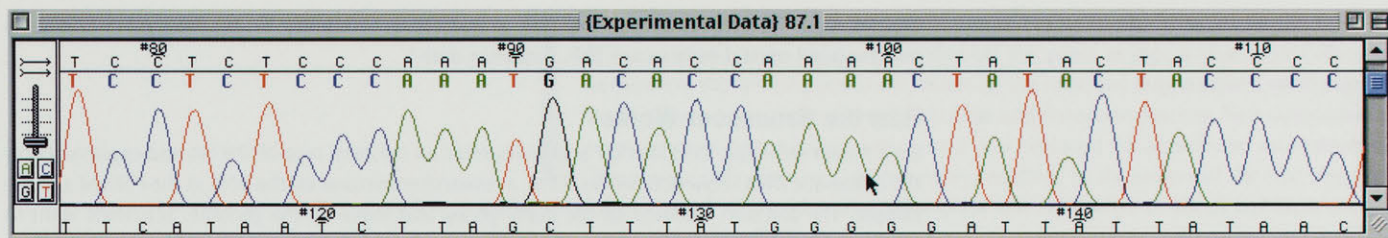
Students from the University of Southern California and the University of California, Santa Barbara, are already involved in research, with others from University of California, Los Angeles, expected to participate. Dr. Kizirian also hopes to begin a research project with students from California State University, Dominguez Hills, studying lizards in southern California.

"The students would design a project and do the research, giving us insights into biodiversity in southern California," Dr. Kizirian said. "The Keck program stands to have a profound impact both locally and around the world."

Researchers didn't have to go far to find their first taxonomic subjects for study. In fact, they didn't even have to leave the building. The museum research collections, among the top three in the nation in size and diversity, are a huge resource for molecular studies.

An image of a DNA sequencing gel: each strip of colored bars represents one specimen, with each colored bar representing one nucleotide base of the DNA sequence. The gel is read from bottom to top, and the sequence of bases can be used to reveal the patterns of evolution for the groups under study.





Chromatogram: Data generated by the automated sequencer are available in a form called a *chromatogram*, from which the DNA sequence is read directly. Polymerase chain reactions yield DNA fragments of different lengths, which are pushed through a thin acrylamide gel using an electrical current. As fragments pass by a laser, fluorescently labeled nucleotides are recognized as different colors, which correspond to one of four possible nucleotides (A, C, T, G).

Gobies, Lizards, and Ant-Decapitating Flies

The museum has thousands of frozen tissue samples, representing everything from crustaceans to fishes, amphibians, reptiles, marine mammals, and birds. In addition, researchers can pull DNA from millions of insect specimens, hundreds of thousands of bird and mammal skins, and thousands of dried echinoderms and crustaceans. It all adds up to a taxonomic treasure trove unrivaled in the world—a trove that grows each time museum staffers go into the field.

Here are just some of the subjects of museum study projects that have had their DNA pass through the Keck program's sequencer:

■ **Abalone and their relatives.** Dr. Daniel Geiger is seeking to discover how different types of primitive snails have colonized the shallows and depths of the ocean and how they have evolved in size. Examination of DNA is especially important in animals of variable size such as the well-known and large abalone as compared to others barely 2 mm (1/16 inch) in diameter because the evolution of DNA is independent of size.

■ **Ant-decapitating flies.** These entomological charmers, known as phorids, are being studied by Dr. Brian Brown, who hopes DNA sequencing will help clear up uncertainties in their systematics and reveal previously unknown diversity. The museum's collection of phorids is one of the best in the world and will supply plenty of material for this study, which is being aided by Dr. Kizirian.

■ **Lizards.** Dr. Kizirian is leading a series of projects here, studying the evolution of neotropical lizard diversity. Studies of legless lizards pose especially interesting questions, such as: Does limb reduction evolve the same way in different groups? And how does the environment influence this evolution? Molecular data will help reconstruct the history of the group.

■ **Gobies.** These small, bottom-dwelling, bony fishes offer examples of varied evolutionary and ecological patterns. These patterns are found across a range of vertebrates, making gobies a good model for answering broader questions of vertebrate evolution. Gobies are Dr. Thacker's area of expertise.

Gobies captured Dr. Thacker's interest because they're small (some weigh just 0.1 gram, while others are 8 mm or barely a quarter of an inch when sexually mature), relatively young (the group is only about 60 million years old), and little is known about them beyond the fact that they live just about everywhere there's water. Dr. Thacker has a lot of questions she wants answered: Why are they so successful, comprising 10 percent of all bony fishes? Why are they so small? How has their morphology evolved?

"We've answered some of the evolutionary questions and small-size questions," Dr. Thacker said. "Now we're getting into the biogeography—the evolution of their distribution. They're so small and such a young group; how did they get all over the world?"

DNA research is helping. Previously, morphological data had yielded the conclusion that gobies got smaller and simpler over time and that all small and simple gobies are related.

"My analysis shows that's not true," Dr. Thacker said. "It's a variable group, and small ones evolved again and again and again, independently of one another."

Those insights wouldn't have been possible just from looking at the gobies' external appearance. Because of their small size and simple makeup, "whole groups can look about the same," Dr.

Thacker said. "There's really only one way to track their variability. To get the kind of fine-scale information I need, I have to use DNA sequence data."

How the Sequencer Works

On a recent weekday, Drs. Thacker and Kizirian led an informal tour of the lab and explained how the automatic DNA sequencer works. First, a researcher extracts all the DNA in the cells of a tissue sample. The solution contains all the many genes that make up the genome. Scientists want to read only one of these genes and to do that they need to make many copies of it.

To delineate the bit they want to amplify, they use short sequences of DNA called *primers*. These primers work like fish hooks to pull the correct sequence out of the more than 10,000 genes. After using enzymes and a process called a polymerase chain reaction to copy the gene, they purify the many copies, perform the reaction that attaches the dyes to the bases, and then run the reaction on the DNA sequencer.

A strong electrical current is applied to the DNA mix, and the fragments travel down a very thin gel. The smaller fragments move faster, followed by the larger ones. This string of fragments forms the colored gel image researchers see on their screens. The brilliant colors identify the four letters of the genetic alphabet: A, T, C, and G. The sequence of the letters spells out one "word" in the genetic story of the study subject.

"When the dye works," Dr. Thacker said, "it's a lovely sight."

Stepping behind the sequencer, Dr. Thacker opened the door to an oversized freezer, revealing "the world's largest collection of frozen gobies," kept at -70 degrees C (-94 degrees F) to minimize enzyme decay.

The Race Against Extinction

Nearby, taped to a shelf above a work station, dangles a photo of a hut in a tropical setting—UC Berkeley's field lab on the island of Moorea in the Pacific. Dr. Thacker has collected gobies off the island as well as in Hawaii, Palmyra Atoll, and throughout the Caribbean. This year she will return to Moorea and will gather samples in Tahiti and other islands of French Polynesia.

"A lot of Indo-Pacific questions are underexplored," she said. "Hopefully I'll do a lot of the research in my lifetime."

The gobies make quite a trip from the tropical waters off these balmy islands to the museum's first-floor deep freeze, but it's nothing compared to the journey of discovery the tiny fish make possible in the Keck lab. Gobies are an important link in a food chain that doesn't take long to reach humans. Their success may offer lessons applicable to other animal species.

"The more we understand about other species on the planet, the better equipped we'll be to manage resources, which are disappearing rapidly," Dr. Kizirian said. "We really are in a race—a race with extinction."

The new DNA sequencer helps put museum researchers at the front of that race.

The museum's DNA lab is funded by a grant from the W. M. Keck Foundation of Los Angeles, which "seeks to enrich research and teaching through support for equipment, facilities, fellowships, and basic research projects at the frontiers of science and engineering." Other contributors to the lab include the Ralph M. Parsons Foundation, the Natural History Museum Foundation, and the National Science Foundation. The funding has gone to upgrades in the lab, putting it at the forefront of technology and techniques in DNA sequencing.

Dennis Arp is a freelance writer whose articles have appeared in the Los Angeles Times, Orange County Register, Chicago Tribune, and Portland Oregonian. He lives in Brea with his wife and two sons. All have been museum members since 1995.

Focus on the West

California Newspapers, part 2: Los Angeles

THE SAN FRANCISCO BAY AREA ALREADY HAD A LIVELY JOURNALISTIC SCENE BY THE TIME THE first Los Angeles area newspaper rolled off the press in 1851, a year after California became the thirty-first state in the Union. At the time, Los Angeles had a small population—about 2,200 people of mostly Mexican and European descent. Men outnumbered women two to one. A mayor and council now replaced the *alcalde* and *ayuntamiento*. There were only three or four two-story buildings in the town—all the rest were flat adobe structures roofed with mud and tar. The plaza was the center of social and business life where Americans and native Californios congregated.

It was in this setting that the *Los Angeles Star* debuted as the city's first newspaper on May 17, 1851. For the first four years, the paper was printed in both English and Spanish, with the two Spanish pages titled "*La Estrella de Los Angeles*." In 1855 the Spanish section was transferred to *El Clamor Público*, and the *Star* appeared in English only. Some of the articles and editorial comments included in the paper concerned mail service, Indian affairs, the Pacific railroad, Mormons (who were planting a colony in the San Bernardino Valley), state divisions, and Los Angeles County boosterism. Meanwhile, Los Angeles's second newspaper, the *Southern Californian*, was established and provided competition to the *Star* during its brief lifespan from 1854 to 1856.

Los Angeles Times building at First and Broadway.



Thomas Gardiner decided to start a new daily in Los Angeles, which was printed at the *Mirror* office but was called the *Los Angeles Times*. Like the *Mirror*, the *Times* was editorially Republican. The two newspapers eventually merged to form the Times-Mirror Company—the *Mirror* becoming the weekly edition of the *Times*. By then, the *Times* had been taken over by Colonel Harrison Gray Otis who, with his wife Eliza, did nearly all the work on the paper. While Otis wrote the editorials and much of the local news, Eliza—a somewhat distinguished poet—regularly contributed two columns titled "The Saunterer" and "Susan Sunshine," which dealt with subjects of feminine interest as well as with the philosophy of life, morals, and religion.

In 1885, Harry Chandler joined the staff of the *Times* as a clerk in the circulation department. That year the *Times* began to publish the first of a number of "mid-winter" numbers—special editions aimed at describing the attractions of southern California—its climate, commercial opportunities, and the low railway rates from Chicago to Los Angeles. These editions contributed to L.A.'s "boom" as real estate sales went sky high and new towns sprang up virtually overnight.

Labor Struggles

By late 1888, the boom had collapsed, resulting in the paring of employees' wages and a long and bitter struggle with the labor unions. On October 1, 1910, the battle between the anti-union *Times* and the labor unions culminated with the bombing and destruction of the *Times* plant. Twenty persons died and at least as many were injured. Two brothers, James and John McNamara, were

Sunday comic pages for a 1934 edition of the *Los Angeles Examiner*, a newspaper owned by William Randolph Hearst.



implicated in the crime but were defended by Job Harriman (the Socialist candidate for mayor) and attorney Clarence Darrow, who believed that the whole incident had been a frame-up. The brothers, however, eventually admitted their guilt.

In 1917 Harry Chandler assumed the helm of the *Times* upon the death of his father-in-law; in 1960 his grandson, Otis Chandler, took over.

The *Los Angeles Herald*, begun in 1873 by C. A. Storke, shared office space and equipment with the *Los Angeles Express* for ten years. The *Herald* gained fame when it became the first paper in southern California to be printed by steam (rather than by a hand press), and it did the printing for nearly every newspaper in the city. In 1922, the paper was acquired by Hearst; nine years later the *Herald* absorbed the *Evening Express*. In 1962, the *Herald-Express* merged with the *Los Angeles Examiner*, a paper founded by Hearst in 1903 to complement his *San Francisco Examiner*.

The *Los Angeles Examiner* was intended as a labor-union journal, in contrast to the anti-union *Los Angeles Times*. (The *Examiner* later became more conservative and less pro-labor.) By the 1950s, the *Examiner* had become the largest afternoon daily in the nation with its sensational stories and muckraking exposés, color comics, and lurid headlines. When Hearst merged the *Herald-Express* and *Examiner* in 1962, the new *Los Angeles Herald-Examiner* earned the distinction of having the largest afternoon circulation of any paper in the country. A bitter labor dispute resulted in a loss of readership and advertising; the paper never recovered financially and shut down in 1989.

Fire crew at the bombing of the *Los Angeles Times* building on First and Broadway, October 1, 1910.



Today's Papers

One of Los Angeles's longer-running newspapers was the *Los Angeles Daily News*, which Cornelius Vanderbilt, Jr., founded in 1923 as the *Los Angeles Illustrated Daily News*. Though it provided competition for the *Los Angeles Times* and the *Los Angeles Examiner*, the *Daily News* initially did not fare well financially. In 1926 Manchester Boddy took over the reins and dropped the tabloid format of the paper. Though Boddy had originally been a Republican, he made his paper the only one in the city to support Roosevelt and his New Deal. Waging a campaign against local vice in 1938, the *News* attacked Mayor Frank Shaw (backed by the *Times*) and supported reformer Fletcher Bowron instead. The *Los Angeles Daily News* folded in 1954, but was revived as a daily in 1984.

In addition to the proliferation of newspapers published for the largely Anglo southern Californians in the state's first hundred years, a number of ethnic and special interest papers were formed to serve Los Angeles's culturally diverse population. They helped immigrant communities adjust to life in America as well as to maintain cultural ties to their homelands. Most of these papers were short-lived as business enterprises, but several, such as *La Opinión* (Spanish) and *Rafu Shimpo* (Japanese; the name means "L.A. news") have survived since the beginning of the twentieth century.

Mention also needs to be made of the West Coast's oldest African American newspaper, the *Advocate*, which was founded in 1879 by John J. Neimore. In 1910 Charlotta Spears Bass bought the Los Angeles paper and changed the name to the *California Eagle*. For the next forty years Charlotta and her husband, Joseph Bass (a founder of the *Topeka Plain Dealer*), waged many battles against discrimination and segregation through their newspaper and through political activism. Bass sold the paper in 1951 and went on to pursue a career in politics. Among other campaigns, she ran as the Progressive candidate for vice-president in 1952 on the ticket with presidential candidate Vincent Hallinan. The *Eagle* folded in 1964.

Newspapers in the early days of California's statehood were often the only source of more or less reliable information or current events and on general subjects available to the average intelligent adult. Between 1850 and 1936, approximately 200 separate newspapers were published, although only 20 or so covered the entire city or lasted more than a few years.

JACQUELINE MORIN

Collections Manager in History, Seaver Center for Western History Research

The *Los Angeles Star* debuted as the city's first newspaper in 1851.

"Focus on the West" is based on the resources of the Seaver Center for Western History Research, which maintains a large collection of original California newspapers as well as original journals on microfilm.

Los Angeles Star
LOS ANGELES, CALIFORNIA, SATURDAY, NOVEMBER 21, 1868.
NO. 49.

VOL. XIV.

A DING OF SUMMER.
All in the arms of autumn lying,
Fading leaves around her lying,
Summer, sick and sad, is dying.
Now so much that she to me,
In the evening's dim moon,
Wearing golden robe and gown,
Felt her in a wailing cry,
Waves of all summer's grief,
For the shadow of autumn's rest.

THE REIGN OF AUTUMN.
The night is near the end of the day,
The green is under the gray,
And down the hollow the dim, winged creature,
Is flying free and away.
But see the moon, dark and the moon,
The glow and the glory down,
And down the hollow the dim, winged creature,
Is flying free and away.
In the moon, a dead and a dead,
The green is under the gray,
And down the hollow the dim, winged creature,
Is flying free and away.

MISCELLANEOUS INTELLIGENCE

Curfew Bell.
Many have heard of the curfew bell, but not all know its origin. The history is the legend that has been handed down to us. It is said that in the time of William the Conqueror, who ordered a bell to be rung about midnight in summer, and at eight o'clock in the evening in winter, at which time the people in towns were to go to bed. The people in towns were to go to bed. The people in towns were to go to bed.

THE REIGN OF AUTUMN.
The night is near the end of the day,
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And down the hollow the dim, winged creature,
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But see the moon, dark and the moon,
The glow and the glory down,
And down the hollow the dim, winged creature,
Is flying free and away.

Museum on the Move

Understanding Caribbean Biodiversity: Guana Island Project

For more than two hundred years, intensive coral reef and oceanographic research has taken place in the Caribbean, which is dotted with numerous marine labs. Despite this intensive study, scientists from the Natural History Museum have been finding out how little we really know about Caribbean biodiversity.

The museum's Guana Island project is a three-year survey of the small marine invertebrates that live in the shallow waters of the British Virgin Islands. Funded by grants from the National Science Foundation and the Falconwood Corporation, the project focuses on the marine habitats found around a single island (Guana Island). Areas studied range in size from clumps of algae no bigger than tennis balls to white sand beaches, reefs, and seagrass beds up to several hectares in area. Most of the collecting is done either in very shallow water or using SCUBA equipment.

The project differs from past collecting expeditions in that the educational value of the work is

unfinished version of this website is already being used by instructors at H. Laverty Stouff Community College in the British Virgin Islands and at UCLA. Most of these animals are microscopic and have never been photographed, and even the larger species such as shrimps and crabs lack published photo documentation.

Several experimental techniques have been used to sample Guana Island habitats. Especially effective were artificial reefs made of concrete and plastic designed to mimic microhabitats found on an individual coral head so that the living reef itself can be left unharmed. These artificial reefs were placed around the island in 1999 and retrieved this past summer. Other experimental techniques include light traps, which catch nocturnal swimming invertebrates that stay hidden in the sand and rocks during the day; airlifts that suck up the small worms and crustaceans that live in the reef rubble; and hand dredging, which has yielded exciting small specimens from the deeper sand flats at the base of the reefs.

The biodiversity of Guana Island is astonishing. Each year different sets of animals are being found in

this number is all the more amazing. For some groups, such as some of the small crustaceans caught in the light traps, it is not uncommon to find more undescribed than known species within a sample.

—Todd L. Zimmerman, Graduate Student in Residence, Crustacea

New Director of Membership



DICK MEIER

Teresa Garay has been appointed Director of Membership for the Natural History Museum. A native of Los Angeles, Ms. Garay comes to the museum with a background in communications and

fundraising. She has produced children's programming for television and has earned four L.A. area Emmys for her work. She served as manager of community relations for local television station UPN13 and entered the fundraising field as director of special events for the L.A. Gay & Lesbian Center. Ms. Garay was most recently development director for the Center for the Partially Sighted, where she oversaw the fundraising operation.

Ms. Garay embarked on a fundraising career because she decided it was time to start "giving back to the community." As she noted, "Some very generous philanthropists provided for me along the way. This is my way of honoring their efforts."

Said Ms. Garay, the Natural History Museum "figures prominently in my childhood memories. I can still remember the school bus ride from First Street Elementary in East L.A. and my first dinosaur sighting. Talk about exciting! If my work on behalf of the Membership Department can create a satisfying museum experience for others, and this results in a stronger and better institution, I'll feel I've accomplished something pretty worthwhile."

Gift to Restore Mission Paintings

The museum is pleased to announce a generous gift of \$50,000 from Trustee Lynn Brengel and her husband Douglas Brengel to conserve twenty-one paintings of the California missions by English artist Edwin Deakin (1838–1923).

Art historians and collectors consider Deakin's



Guana Island in the British Virgin Islands

being stressed as well as the scientific value. During the month-long field season in the British Virgin Islands, the field team spends part of its time working with local students of all ages teaching about the diversity of life in the local waters and demonstrating the various techniques being used to find and record that diversity.

In addition, instead of simply preparing and preserving as many specimens as possible for later study in the laboratory, living specimens are photographed the day they are collected. Photographs will soon be posted on the Internet at www.nhm.org/guanastudy to create what will become the world's largest electronic, image-based identification guide to Caribbean marine invertebrates. Material from the

locations previously searched, sometimes under the same rock. Species seen in one year are absent the next. As a result, it is nearly impossible to describe the "normal" community for any habitat. Part of this is due to water temperature fluctuations and hurricane effects, changing collecting techniques from year to year, and subtle differences in habitats. So that productive collecting locations can be identified and found year after year, SCUBA divers map the ocean bottom and identify locations using Global Positioning Satellite data.

Not only is the changing composition of species surprising, but the estimated number of undescribed species is astonishing. As many as 30 percent of the species photographed the first year may be new to science, and because we concentrated on photographing the showy and colorful specimens,



Mission Santa Inés by Edwin Deakin. Between 1870 and 1899, Deakin traveled by horse and buggy to all 21 California missions to sketch and paint what remained of the once spectacular buildings.



Lynn and Douglas Brengel

mission series, painted during the 1880s when many of the missions had fallen into disrepair, the artist's finest work. Historians recognize the paintings as valuable documents of the state of the missions before they were extensively restored in the twentieth century. When Deakin exhibited the paintings in San Francisco in 1899, his work inspired preservation efforts that continue to this day.

Founded more than 230 years ago by Franciscan priests from Spain and stretching along the Camino Real from San Diego to Sonoma, the missions played a crucial role in Spain's colonization of the west. People with an interest in California history—from fourth grade students throughout the state to academics and descendants of California's native peoples—continue to study and debate the impact of the mission system. Thousands of tourists visit the missions

A Wonderful World is Yours to Give



THIS HOLIDAY SEASON, you can surprise someone special with a membership at the Natural History Museum.

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Exhibitions

IN THE EXPOSITION PARK MUSEUM...

A *T. rex* Named Sue

**November 18 through April 22, 2001,
first floor, Special Exhibits Gallery**

This national touring exhibition features a life-sized cast of the 45-foot-long articulated dinosaur skeleton and a variety of interactive components that allow visitors to explore in-depth this famous fossil, dinosaurs, and paleontology. This exhibit was created by The Field Museum, Chicago, and made possible through the generosity of McDonald's Corporation. (See sidebar, p. 11.)

Americanos: Latino Life in the United States

**December 2 through February 25, 2001
Dart Gallery**

Thirty-two photographers spent two years capturing this extraordinary view of the breadth and variety of the Latino experience. These 120 photographs reveal the diverse cultures, ideas, and dreams of a people who share a desire to make life better for themselves, their family, and their nation. The exhibition is a project of Olmos Productions and is organized by the Smithsonian Institution Traveling Exhibition Service and the Smithsonian Center for Latino Initiatives. It is made possible through the generous support of Time Warner Inc. and U S WEST. Additional support has been provided by Farmers Insurance. (See page 2.)

every year, and some missions still celebrate mass and serve their parishioners.

Deakin completed two sets of mission paintings in oil on canvas and one in watercolor. The Natural History Museum owns the finer of the two sets of oil paintings, which it purchased from Deakin's heirs in 1959–60. The museum also owns sketches Deakin made as he traveled throughout California by horse and buggy studying the missions. The paintings are among the treasures of the museum's California history collection, which is among the country's largest and most valued.

State-of-the-art conservation of the series will

A Communion of the Spirits: African-American Quilters, Preservers, and Their Stories

**March 17 through September 3, 2001,
Dart Gallery**

This exhibition takes a look at the vibrant traditions and family legacies of African American quilt-makers and the significance of quilts in African American culture. Woven through quilt designs are the ongoing struggles, jubilations, and journeys of generations of African-Americans. This national touring exhibition includes more than 200 photographs, forty unique quilted mattes for framed images, and a selection of fifteen quilts.

Fetishes from the Walker Collection

Continuing, first floor stair landing

More than one hundred of the 3,951 Zuni fetishes donated by Dr. and Mrs. Boyd W. Walker. The small sculptures span the last three decades of the twentieth century, when new stones and shells were used to portray unconventional subjects and exotic animals.

Meteorites: Great Balls of Fire!

Continuing, Hall of Gems and Minerals

This special exhibition includes the rare Los Angeles Meteorite, the first from Mars known to have landed in the United States. It also includes an array of different types of meteorites, a sampling of "meteor-wrongs" (items that people have mistaken for meteor-ites), and tips on how to identify the real thing.

take place to allow the paintings to become more widely known and studied. The paintings will be cleaned and new backings applied, each step photographed for the conservation record. Once this work is finished, high-quality photographs will be taken of the paintings so that first-rate reproductions can be made and the collection documented. The paintings will be reframed and eventually displayed at the Natural History Museum. The museum is grateful to the Brengels for their generosity in allowing this important work to take place and for the paintings to assume pride of place once again in the museum's exhibit halls.

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